

Definition

The salivary glands are exocrine glands that are part of the digestive system and include three major paired glands: the parotid, the submandibular, and the sublingual glands. There are also many smaller minor glands in the oral cavity, pharynx, and larynx.

Technique

Diagnosis of diseases of the salivary glands depends on a careful history and examination of the glands and their effluent. If the patient's main complaint is pain, then the examiner should try to determine the onset and duration of symptoms, and particularly to try to establish a relationship to eating, since salivary flow increases during this time. Has there been any fever or chills? Is there any sign of facial weakness or paralysis? The facial nerve passes through the parotid gland, so this anatomical relationship should also be considered. Sometimes this is the initial presenting sign, and the parotid gland must be carefully examined for signs of neoplasm.

The major salivary glands are best examined by palpation and by observation of the salivary effluent during palpation. Only the parotid gland and the submandibular glands can be examined in this way. The parotid gland lies on the lateral surface of the mandibular ramus and folds itself around the posterior border of the mandible. It is generally soft and is not usually palpable as a discrete gland. The anterior border of the gland may be better defined by having the patient clench his or her teeth together, which tenses the masseter muscle. The parotid gland lies just behind the masseter, and its consistency may be appreciated by pressing the gland on its lateral surface against the vertical mandibular ramus. Parotid secretions are carried to the oral cavity by Stensen's duct, which enters the oral cavity in the cheek just opposite the upper second molar tooth. It is visible as a small papilla in the buccal mucosa. Careful observation of this papilla during palpation of the gland will usually reveal saliva coming from the small duct orifice. Sometimes it is helpful to dry the mucosa in the vicinity of the duct with a dry gauze sponge in order to visualize the flow more easily. The saliva from the parotid gland is usually clear, thin, and colorless. The clinician should look carefully for pus, mucus, or particulate matter in the secretion.

The submandibular gland resides just under the inferior border of the mandibular body and is best palpated bimanually with one hand in the lateral floor of the mouth and the other on the submandibular gland. The gland is usually soft and mobile and should not be tender to palpation. The submandibular duct or Wharton's duct runs

superiorly and anteriorly to empty adjacent to the frenulum of the tongue. The small duct orifice is visible in the top of a papilla in this area. Again, observation of the salivary flow during palpation is most helpful. The submandibular gland is more commonly associated with stone formation than the other glands because the gland's secretion is more mucoid and because the gland lies in a dependent position relative to the duct orifice. This leads to stasis of secretions in the proximal duct. The sublingual glands lie just beneath the mucosa in the floor of the mouth and empty directly into the mouth or into the submandibular duct. The gland is not discretely palpable, nor are the duct openings usually visible.

Basic Science and Clinical Significance

The salivary glands secrete saliva, which serves as a lubricant for chewing and swallowing. Saliva is largely water but also contains electrolytes, mucin, and digestive enzymes, most notably amylase. These enzymes are important in the digestion of carbohydrates. Saliva is essential to good dental health by helping to clean the teeth as well as maintaining a pH that discourages dental decay.

The formation of saliva is a complex phenomenon. Crystals can form within the saliva that create a nidus for stone formation similar to those in the urinary tract. These stones can lead to obstruction of the duct with rapid swelling and pain in the gland and, ultimately, infection. More commonly this occurs in the submandibular system and rarely in the sublingual gland. Infection can also occur in the absence of stone formation. In fact, anything that decreases salivary flow can lead to infection. In the elderly population atrophy of the glands, drug effects, as well as dehydration, can produce a low-flow state and lead to a suppurative bacterial parotitis. There are also primary viral infections that can affect the salivary glands, the most notable of which is mumps, or acute epidemic parotitis. Mumps is a self-limited infection characterized by unilateral or bilateral parotid swelling, fever, and sometimes orchitis.

The salivary glands are capable of an extremely wide range of neoplastic expression, both benign and malignant, and diagnosis of a salivary gland mass depends on its histopathologic appearance. In the parotid gland the appearance of a mass in the gland with facial weakness is suggestive of a malignant neoplasm. It is very rare for facial weakness to occur with benign tumors.

Diffuse parotid enlargement without pain can occur in association with a number of conditions. In alcoholism, malnutrition, diabetes, and obesity, fatty infiltration and salivary gland hypertrophy can produce enlargement of the glands, particularly the parotid. Sjögren's syndrome or Mik-

Table 131.1
Disorders of the Salivary Glands

I.	Inflammatory
A.	Sialolithiasis
B.	Bacterial parotitis
C.	Viral parotitis—mumps
D.	Sjögren's syndrome—Mikulicz's disease
II.	Neoplastic
A.	Benign
1.	Pleomorphic adenoma
2.	Papillary cystadenoma lymphomatosum—Warthin's tumor (parotid only)
3.	Oncocytoma
B.	Malignant
1.	Mucoepidermoid carcinoma
2.	Adenoid cystic carcinoma
3.	Acinic cell tumor
4.	Squamous cell carcinoma
5.	Malignant mixed tumor
6.	Lymphoma
III.	Idiopathic enlargement—fatty infiltration and salivary gland hypertrophy
A.	Alcoholism
B.	Malnutrition
C.	Diabetes
D.	Obesity

ulicz's disease may also produce diffuse or localized enlargement of the glands. This syndrome is characterized by dry eyes and mouth, and may be accompanied by numerous autoimmune diseases such as rheumatoid arthritis, lupus erythematosus, or polymyositis. Histopathologically the glands show intralobular ductal epithelial hyperplasia and lymphocytic infiltration of the gland.

Table 131.1 summarizes the various disorders involving the salivary glands.

References

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